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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/683,727	10/10/2003	Arthur Sherman	ASMMC.9CP1DV1C1	1627

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EXAMINER	
STOUFFER, KELLY M	
ART UNIT	**PAPER NUMBER**
1762	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/08/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/08/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary	Application No.	Applicant(s)	
	10/683,727	SHERMAN, ARTHUR	
	Examiner	Art Unit	
	Kelly Stouffer	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 18-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 18-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 31 January 2007, with respect to the specification have been fully considered and are persuasive. The objection of the specification has been withdrawn.

2. Applicant's arguments filed 31 January 2007 with respect to the 35 USC 103(a) rejections of the claims have been fully considered but they are not persuasive. The applicant argues that the transfer of Matsumoto is not for the purpose of completing aluminum oxide deposition. The examiner did not cite Matsumoto to include moving the substrate for the purpose of indicating it was to complete aluminum oxide deposition, but to indicate that one of ordinary skill in the art would be able to combine Matsumoto with Penneck because both include provisions for moving a substrate. Penneck teaches finishing the aluminum oxide deposition with an oxygen plasma (column 11 lines 1-18).

The applicant further argues that one of ordinary skill in the art would not combine Penneck with Matsumoto because Matsumoto makes a thin film transistor and Penneck makes a film on a wire or cable. However, one of ordinary skill in the art would use the oxygen plasma of Penneck et al. to form a coating of the metal oxide (column 11 lines 1-18) in order to form a layer free of contaminants that would normally occur during wet deposition processes (columns 7 and 8 lines 59-21). One of ordinary skill in

the art would certainly recognize the utility that this method would also have for thin film transistors, as it would be optimal to have layers free of contaminants in those devices as well as on cables or wires.

In addition, the applicant argues that there is no suggestion that plasma can be supplied in the same reactor that the aluminum is deposited in. However, this limitation is not present in the claims. Matsumoto teaches the cyclical process and in combination with Penneck teaches the cyclical process using oxygen plasma.

Therfore, the rejections of the previous office action are upheld and are repeated here.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-4 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent number 5480818 to Matsumoto et al. in view of US Patent number 4985313 to Penneck et al.

Regarding claims 1 and 18, Matsumoto et al. discloses a process for growing aluminum oxide on a substrate by a sequential chemical vapor deposition or atomic layer deposition process comprising a plurality of cycles with each cycle comprising exposing the substrate to gaseous trimethyl aluminum, stopping the flow of gaseous trimethyl aluminum which is consistently removed from the chamber by a vacuum pump, exposing the substrate to an oxygen source which is consistently removed from the chamber by a vacuum pump and forming an aluminum oxide film of 50 nm after several cycles where more than one monolayer may be formed (column 7 lines 29-49). Matsumoto et al. does not teach using oxygen plasma as the oxygen source rather than water vapor, but allows for a movable substrate in-between the chamber where the aluminum oxide is deposited and a plasma deposition chamber (Figures 1 and 5). Penneck et al. teaches moving a substrate with a metal layer such as aluminum (also using trimethyl aluminum as a precursor in column 14 lines 9-35) through an oxygen plasma to form a coating of the metal oxide (column 11 lines 1-18) in order to form a layer free of contaminants that would normally occur during wet deposition processes (columns 7 and 8 lines 59-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsumoto et al. to include using an oxygen plasma as an oxygen

source alternating with the aluminum source as taught by Penneck et al. in order to form a layer free of contaminants that would normally occur during wet deposition processes.

Regarding claim 2, Matsumoto et al. discloses a variety of aluminum oxide final layer thicknesses throughout the document that depend on the number of deposition cycles preformed and the desired application. Therefore, the variable of aluminum oxide layer thickness is modified by routine experimentation and is not inventive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsumoto et al. to include a layer thickness of aluminum oxide as 3 A by routine experimentation depending upon the application of the layer absent evidence showing a criticality for the claimed value.

Regarding claims 3 and 19, the plasma would be generated in the chamber remote from the aluminum deposition chamber as shown in Figures 1 and 5 of Matsumoto et al.

Regarding claims 4 and 20 that require a reaction temperature, Matsumoto cites several reaction temperatures throughout the document depending upon the application of the film and the type of film to be grown (column 9 lines 64-67). Therefore the variable of reaction temperature is by routine experimentation and is not inventive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsumoto et al. to include a reaction temperature of room

temperature by routine experimentation depending upon the application of the layer absent evidence showing a criticality for the claimed value.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1762

kms

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER